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TITLE: **Overexpression** of alpha4 chain-containing **laminins** in human glial **tumors** identified by gene microarray analysis.
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AB Differential gene expression in **tumors** often involves growth factors and extracellular matrix/basement membrane components. Here, 11,000-gene microarray was used to identify gene expression profiles in brain **tumors** including high-grade gliomas (glioblastoma multiforme (GBM) and anaplastic astrocytoma), low-grade astrocytomas, or benign extra-axial brain **tumors** (meningioma) in comparison with normal brain tissue. Histologically normal tissues adjacent to GBMs were also studied. All GBMs studied overexpressed 14 known genes compared with normal human brain tissue. Overexpressed genes belonged to two broad groups: (a) growth factor-related genes; and (b) structural/extracellular matrix-related genes. For most of these 14 genes, expression levels were lower in low-grade astrocytoma than in GBM and were barely detectable in normal brain. Despite normal-appearing histology, gene expression patterns of tissues immediately adjacent to GBM were similar to those of their respective primary GBMs. Two genes were consistently up-regulated in both high-grade and low-grade gliomas, as well as in histologically normal tissues adjacent to GBMs. These genes coded for the epidermal growth factor receptor (previously reported to be overexpressed in gliomas) and for the alpha4 chain of laminin, a major blood vessel basement membrane component. Changes in **expression** of this **laminin** chain have not been previously associated with malignant **tumors**. **Overexpression** of **laminin** alpha4 chain in GBM and astrocytoma grade II by gene microarray analysis was confirmed by semiquantitive reverse transcription-PCR and immunohistochemistry. Importantly, an alpha4 chain-containing **laminin** isoform, **laminin**-8 (alpha4beta1gamma1), was **expressed** mainly in blood vessel walls of GBMs and histologically normal tissues adjacent to GBMs, whereas another alpha4 chain-containing **laminin** isoform, **laminin**-9 (alpha4beta2gamma1), was **expressed** mainly in blood vessel walls of low-grade **tumors** and normal brain. GBMs that **overexpressed laminin**-8 had a shorter mean time to **tumor** recurrence (4.3 months) than GBMs with **overexpression** of **laminin**-9 (9.7 months, P=0.0007). Up-regulation of alpha4 chain-containing laminins could be important for the development of glioma-induced neovascularization and glial **tumor** progression. **Overexpression** of **laminin**-8 may be predictive of glioma recurrence.